

6/24/98

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SECTION 18 REVIEW

6/24/98

SUBJECT: Section 18-Use of Myclobutanil on Artichokes in California and Drinking Water Assessment

FROM: Daniel Rieder, Chief
Environmental Risk Branch III
Environmental Fate and Effects Division (7507C)

TO: Robert Forrest, PM 05
Registration Division (7505C)

A. Risk Characterization Summary

The proposed use of myclobutanil on artichokes in California does not appear to pose adverse effects to birds, mammals, fish, or aquatic invertebrates. Risk to nontarget plants could not be assessed due to lack of data; therefore, risk to nontarget plants remains a possibility, which could be reduced by taking precautions to minimize spray drift. Risk to nontarget insects could not be assessed due to lack of data; therefore, risk to nontarget insects remains a possibility from the proposed use of myclobutanil. Myclobutanil is relatively persistent, with field half-lives of 92 to 292 days. The major route of dissipation is believed to be diffusion and dilution; myclobutanil appears to be resistant to most environmental breakdown processes.

Per the request by RD, EFED is providing a drinking water assessment for this emergency exemption. A previous drinking water assessment has been provided to HED to cover this use of myclobutanil; this assessment will be attached to this Section 18 review in response to the RD request.

B. Submission Purpose

California has applied for a special exemption to use Rally 40W fungicide containing myclobutanil on an estimated total of 7000 acres of artichokes in several counties to treat powdery mildew (*Leveillula taurica*). The use area includes the coastal counties of Mendocino, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, and Orange, plus the desert counties of Riverside and Imperial. The majority of artichokes are grown in Castroville, Monterey County.

Application rate: 4 oz of product or 0.1 lb ai/acre

Number of applications per season: 3 at 14 day intervals

Effective date of emergency use: June 30, 1998 to June 30, 1999



Product Information:**Product Name:** Rally 40 W**Active Ingredient:** Myclobutanil.....40%**Inert Ingredients**.....60%**C. Environmental Assessment****1. Environmental Fate and Exposure Characterization**Environmental Fate Data:

- Stable to hydrolysis at pH 5, 7, and 9
- Stable to photolysis in water
- Photolytic soil half-life = 143 days
- Aerobic soil half-life = 66 days
- Anaerobic soil half-life = no degradation at 62 days
- Terrestrial Field Dissipation half-life = 292 days in sandy loam, and 92 days in loam soil.
No apparent leaching was observed at either site.
- Solubility = 142 ppm
- Leaching: myclobutanil is moderately mobile (K_{ds} = 1.46 - 9.77 for adsorption and 0.47 - 4.18 for desorption in 5 soils), with a median K_{oc} = 581. The degradate (1,2,4-triazole) is considered highly mobile, with a median K_{oc} = 104 (average of 112).

TABLE I: Summary of Selected Environmental Fate Properties for Myclobutanil

Property	Range	Value used in assessment	Model
Solubility (water)	142 mg/L	142 mg/L	GENEEC
Hydrolysis $t_{1/2}$	stable at pH 5, 7, and 9	stable - (input value is 0*)	GENEEC
Aquatic Photolysis $t_{1/2}$	stable	stable - (input value is 0*)	GENEEC
Aerobic Soil Metabolism $t_{1/2}$	61-71 days in silt loam, but degradation rates slowed after increasing aging, and after 240 days, 34-37% of parent was still present.	see Terrestrial Field Dissipation	GENEEC SCI-GROW
Terrestrial Field Dissipation $t_{1/2}$	292 days in sandy loam, 92 days in loam soil	129 days = average of aerobic soil metabolism half-lives and terrestrial field dissipation half-lives	GENEEC SCI-GROW FATE
Anaerobic Soil Metabolism $t_{1/2}$	no appreciable degradation in 62 days	not considered	
Aerobic Aquatic Metabolism $t_{1/2}$	no data, no degradation is assumed	(input value is 0*)	
K_{ad}	1.46, 2.39, 4.44, 7.08, 9.77	see K_{oc} values	
K_{oc}	224, 265, 581, 936	581 = median	GENEEC SCI-GROW

* A "0" input value tells the model to assume no degradation via that route

2. Estimated Environmental Concentrations

Aquatic:

The aquatic EECs presented below were generated using the GENEED computer program developed by EFED. This program uses a variety of environmental fate parameters in conjunction with the application rate to estimate the exposure to aquatic organisms from runoff.

Myclobutanil: Aerial Application

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY INCORP DRIFT DEPTH(IN)
.100(.279)	3 14	581.0	142.0	5.0 .0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC DAYS UNTIL (FIELD)	HYDROLYSIS RAIN/RUNOFF	PHOTOLYSIS (POND)	METABOLIC COMBINED (POND-EFF)	METABOLIC COMBINED (POND)
129.00	0	N/A	.00-	.00 .00 *****

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
5.68	5.59	5.15	4.53

Myclobutanil: Ground application

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY INCORP DRIFT DEPTH(IN)
.100(.279)	3 14	581.0	142.0	1.0 .0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC DAYS UNTIL (FIELD)	HYDROLYSIS RAIN/RUNOFF	PHOTOLYSIS (POND)	METABOLIC COMBINED (POND-EFF)	METABOLIC COMBINED (POND)
129.00	0	N/A	.00-	.00 .00 *****

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
5.22	5.13	4.73	4.16

Drinking Water

The peak **surface water** concentrations from the use on artichokes based on GENEEC would not exceed 6 ppb and long-term concentrations in surface water would not be expected to exceed 5 ppb. See the GENEEC model output above.

The groundwater concentrations from the use on artichokes based on SCIGROW would be: about 0.06 ppb

However, note that other uses of myclobutanil, such as turf, have higher rates, and would likely result in higher concentrations in surface water and groundwater. The attachment is a copy of a previous memorandum showing the maximum screening drinking water concentrations for surface water and groundwater for myclobutanil.

Terrestrial

The proposed application rate is 0.1 lb ai/acre, with 3 applications at 14-day intervals. Applying one application at 0.1 lb ai/acre to mammal and bird food items would result in residue levels that would not be expected to exceed a maximum of 24 ppm (short grass). The mean residue levels on short grass would be about 8.5 ppm following one application of 0.1 lb ai/acre. With multiple applications (3), the residues of myclobutanil may build up on food items.

	Peak residue* on short grass unlikely to exceed	Approximation of average residue* on short grass
0.1 lb ai/acre X 3 applications at 14-day intervals	67 ppm	45 ppm
* Over 40 days, assuming a halflife of 129 days based on laboratory and field data		

Note that residue levels on other food items such as forage, seeds or fruit would be lower than the residue level shown for short grass.

3. Ecological Toxicity Data Summary

The following toxicity data has been reviewed in conjunction with registration of myclobutanil.

Terrestrial Wildlife Toxicity Data

Common Name	%AI	Toxicity	NOEL	EPA-ID	CATEGORY
Bobwhite Quail	84.5	LD ₅₀ 510 mg/Kg		0144286	C
Bobwhite Quail	84.5	LC ₅₀ >5000 ppm		0144287	C
Mallard Duck	84.5	LC ₅₀ >5000 ppm		0144287	C
Bobwhite Quail	94.2	LOEC >260 ppm	260 ppm	43087901	S
Mallard Duck	94.2	LOEC >260 ppm	260 ppm	43087902	S
Laboratory rat	91.9	Acute oral LD50=1360 g/kg		006370	C
Laboratory rat	84.5	2-gen. Repro LOEL=1000 ppm	200 ppm	004936	C
Laboratory rat	84.5	2-gen. Systemic LOEL=200 ppm	50 ppm	004936	C

Aquatic Organism Toxicity Data

Common Name	%AI	Toxicity	NOEL	EPA-ID	Category
Bluegill sunfish	84.5	96 HR LC50=2.4 ppm		0144285	C
Rainbow trout	84.5	96 HR LC50=4.2 ppm		0141677	C
Water flea	84.5	48 HR EC ₅₀ =11 ppm		0141678	C
Sheepshead minnow	93	96 HR LC ₅₀ =4.7 ppm		42747903	C
Eastern oyster	93	96 HR EC ₅₀ =0.68 ppm		42747901	S
Mysid	93	96-HR LC50 = 0.24 ppm		42747902	C
Fathead minnow		Early life LOEC=2.2 ppm	0.98 ppm	0266119	S

4. Hazard Assessment

Terrestrial Organisms

Acute Risk: The maximum expected residue of myclobutanil in the environment is not expected to exceed 67 ppm (short grass following 3 applications at 0.1 lb ai/acre; 14-day intervals, assuming a half-life of 129 days). Compared to the acute toxicity test results for birds and mammals, this suggests low potential for acute risk. Endangered mammal and bird species would not be at acute risk.

Chronic Risk: Mean residues of myclobutanil are not expected to exceed 45 ppm (over 40 days during 3 applications of 0.1 lb ai/acre at 14-day intervals assuming 129 day half-life). That does not exceed the avian reproductive NOEL (260 ppm) nor the rat 2-generation reproductive NOEL (200 ppm). It does not exceed the rat 2-generation systemic NOEL of 50 ppm. Mammals and birds, including endangered mammals and birds are not at risk from chronic effects.

Aquatic Organisms

Acute: The maximum aquatic EEC in a small pond adjacent to a treated field of ~6 ppb is significantly lower than all acute toxicity endpoints suggesting minimal acute risk to fish and aquatic invertebrates including endangered species.

Chronic: The long-term EECs in a small pond are all less than 6 ppb and much lower than chronic endpoints for fish and aquatic invertebrates suggesting very low potential for chronic risk, including chronic effects endangered species.

Hazard to Terrestrial Plants:

No data on toxicity of myclobutanil to terrestrial species of plants has been reviewed to date. Therefore, no conclusions regarding possible hazard to these species groups can be made at this time.

Hazard to Non-Target Insects Toxicity Data: No data has been received for review by the Agency regarding toxicity to non-target insects. Therefore, no conclusions regarding possible hazard to these species groups can be made at this time.

Endangered Species: There are no endangered species concerns indicated for birds, mammals, fish, or aquatic invertebrates. Risk to nontarget plants and insects could not be assessed due to lack of data.

D. Labeling Recommendations

Section 18 Label

Do not apply directly to water, or to areas below the mean high-water mark. Do not

contaminate water when disposing of equipment washwater or rinsates.

Product Label

For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift or runoff from areas treated.

If there are questions concerning this review, please contact Dan Rieder at 305-5314.

ATTACHMENT

Date: 11/04/97

MEMORANDUM: Revised estimates of ground and surface water concentrations for Mycobutanil, PC No: 128857, DP Barcode: 239591, Import Tolerance for Bananas.

FROM: Douglas J. Urban /-S-/
EFED Screening and Greybeard Committee
Environmental Fate and Effects Division (7507C)

TO: Carl Grable, PM Team 21
Registration Division (7505C)

Following are estimates of ground and surface water concentrations for Mycobutanil based on the label rate of 0.65 lbs a.i./acre and assuming 15 application per season. (the action was for an import tolerance for bananas; the water numbers were based on turf).

The groundwater numbers are based on a screening tool, SCI-GROW, which tends to overestimate the true concentrations in the environment.

Groundwater EEC (SCI-GROW, Lotus 1-2-3 spreadsheet attached)

3.6 ppb (use for both acute and chronic)

Two surfacewater estimates are provided. This compound is very persistent and mobile. Thus, the concentrations do not change much over time.

Surfacewater EECs:

(1) These estimates are based on the results of a Tier 2 level model run using PRZM/EXAMS for turf (dated 12/9/94; D190680; D190684; D190685). No yearly average value was estimated at that time.

Acute = **158.5 ppb** (Maximum Initial Concentration)

Chronic = **133.9 ppb** (90-Day Maximum Concentration)

(2) These estimates are based on the results of a GENEEC (Version 1.2, 5/3/95) model run (printout attached).

Acute = **145.96 ppb** (Maximum Initial Concentration)

Chronic = **118.6 ppb** (Average 56-Day Concentration)

If you have any questions concerning these findings please contact Doug Urban at 305-5746.

cc: Randy Perfetti, HED
William Dykstra, HED
Nancy Dodd, HED

ATTACHMENTS

GENEEC RUN FOR D239591

RUN No. 1 FOR mycobutanil INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY INCORP DRIFT DEPTH(IN)
.650(7.226)	15 14	520.0	142.0	1.0 .0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC COMBINED	DAYS UNTIL (FIELD)	HYDROLYSIS RAIN/RUNOFF (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)
213.00	0	N/A	.00- .00	.00 *****

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
145.96	143.84	133.34	118.60

Name:	Doug Urban					
Date:	10/30/97					
DBar Code:	D239591					
Chemical:	Mycobutanil					
PC Code:	128857					
Use on DBar Code:	Bananas					
Use Used in Run:	Turf					
Appl Rate:	0.65 lbs a.i./A					
# Appl's:	15					
SCI-GROW Calculations - all three versions (with assumptions)						
9.75 pounds application rate						
For Koc values <9995:						
162-1 t 1/2's between 6 and 1500 days						
						Final
Screening						Screening
concentration						concentration
Use						
Rate						
Chemical name	T 1/2 (days)	Koc	RILP	(ppb)		
Example						
	213	520	2.9667518	0.370	9.75	3.611796
NOTES:						
RILP = Relative Intrinisic Leaching Potential						
Aerobic Soil Half Life = 213 days, from 12/9/94 PRZM/EXAMS run by Siroos Mostaghimi for Turf.						
Koc = 520 from 12/9/94 PRZM/EXAMS run by Siroos Mostaghimi for Turf.						